Space Weather Forecast

Issued on Sunday, 17 April 2022 at 01:19 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: Slight chance of Moderate flares through the period.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Moderate with one Moderate flare in the last 24 hours. This was from one of two relatively large sunspots that have recently rotated onto the northern hemisphere of the Earth-facing side of the Sun. These regions have been the source of a number of common flares, and also other Moderate flares on the 15th. There are a total of seven sunspot regions currently on the Earth-side of the Sun, however the other regions remains much small and less likely to produce notable flares. No Earth-directed coronal mass ejection (CMEs) have been observed in available imagery.

Solar Wind / Geomagnetic Activity: The solar wind continued to be elevated due to Earth moving through the fast wind from a coronal hole. Solar wind speeds strong at first, near 700 km/s, but eased to be generally elevated, 500-550kms. The strength of the magnetic field carried by the wind was weak to moderate with the north-south direction initially in a mainly northward (positive) direction, before becoming more variable from late morning. Geomagnetic activity has been Quiet to Unsettled through this period.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be Moderate to Low with an ongoing likelihood of Moderate flares through the period, primarily due to the new regions that have moved onto the northeast quadrant of the Sun. These also give an above background chance of activity increasing with a very slight chance of Strong flares occurring.

Solar Wind / Geomagnetic Activity: There are no Earth directed CMEs. Earth is embedded within the fast wind of a coronal hole at the moment, with elevated speeds. Further similar enhancements are possible through the period, although confidence is low regarding the strength and timing of these. Quiet to Active geomagnetic activity is forecast, with a slight chance of G1/Minor Storms. These most likely on day 4 (20th).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to be at background levels, but with just a slight increase in probability by the end of the period. This is due to the new sunspot regions moving across the Sun and toward the western hemisphere, and increasingly into a position where the particles from any high energy particle producing flare are more likely to be observed from Earth.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	5	5	5	20
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	60	60	60	60
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	2	2
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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